IV. OP – Ordering and Provisioning

A. OP-2 – Calls Answered within Twenty Seconds – Interconnect Provisioning Center

1. Introduction and Background

The purpose of performance measure OP-2 is to assist in the evaluation of the timeliness of CLEC access to Qwest's interconnection provisioning center and retail customer access to Qwest's business offices. This measures reports on the extent to which customer calls are answered within 20 seconds. It includes all calls to the Provisioning Center (or retail offices), including calls that are abandoned before answer by a Qwest representative. A Voice Response Unit *(VRU)* first responds to a caller, typically providing a menu of options. Time spent by the caller in the VRU does not count against answer time. On the wholesale side, Qwest reports OP-2 only on a region-wide basis. State reports include the regional wholesale results and state-specific retail results. The standard for wholesale performance is parity with retail. It is the only measure associated with CLEC calls to the Provisioning Center.

Qwest contracts with AEGIS to operate the Interconnect Provisioning Center, which is located in Sierra Vista, Arizona. AEGIS uses a Rockwell Spectrum Automatic Call Distributor *(ACD)*, which is new equipment that uses recently updated software. This equipment produces reports on performance, including the percentage of calls answered within 20 seconds. AEGIS provides the information that permits Qwest to report OP-2 results.

For the retail comparison, Qwest uses the total calls to its four consumer call centers, its consumer Spanish-language center, and its small business call center. Qwest has been collecting this kind of information on the retail side of its business for a considerable length of time, and has been making reports to state commissions as part of retail performance reports. Qwest prepares a spreadsheet with data from these call centers, and uses it to report to state commissions, and now to report OP-2 performance.

2. Overall Summary

OP-2 can be released for OSS testing. There are no outstanding exceptions or observations related to this measure.

3. Analysis

OP-2 is simple and straightforward. ACDs make the call-time measurements and produce reports on performance. Except for totaling calls among the retails call centers, Qwest need do little to produce the results for this measure. Manual activities that have the potential for introducing errors are limited to data entry into spreadsheets. Liberty's audit activities included interviews with Qwest and AEGIS personnel who are responsible for reporting performance related to OP-2, review of responses to data requests concerning the process for measuring and reporting OP-2, review and analysis of the information obtained directly from the wholesale ACD, and review and analysis of the spreadsheet that compiles data from the various retail call centers.

AEGIS personnel told Liberty that Qwest people frequent the Interconnect Provisioning Center to observe and monitor operations. Qwest and AEGIS conduct monthly and quarterly monitoring and performance reviews. Regular AEGIS reports to QWEST provide performance and productivity data. Liberty reviewed these reports.

Performance data showed that abandoned calls were being counted as missed calls (*i.e.*, not answered within 20 seconds) on both the wholesale and retail side.

Liberty reviewed a description of the ACD system and its software as they relate to the accuracy of the ACD's timing and calculation. Liberty checked the spreadsheet formulas for adding and calculating the percentage of calls answered within 20 seconds on Qwest's retail side. Liberty also verified that data were accurately transferred from spreadsheets to the Qwest wholesale performance report.

During the course of this audit, Liberty found problems with the reported performance results for OP-2. Through a series of data requests and one exception report (E1020), Qwest and Liberty determined that errors were being made in the process of getting data from AEGIS to Qwest's regulatory reporting group. Qwest changed this process in order to minimize the opportunity for error. Qwest now receives a report generated directly from the switch at the Interconnect Provisioning Center. These changes were made effective starting with the September 2000 results.

Due to the way that historical data are stored, it was not practical for Qwest to go back and correct the results prior to those of September 2000. Qwest has now reported results for two months (September and October), and eliminated prior months' results. Liberty has reviewed Qwest's calculations and recalculated results on the wholesale side for September and October 2000. Earlier in the audit, Liberty checked the calculations for the retail comparable.

4. Findings and Conclusions

a. Performance Measure Release Date

OP-2 was considered as ready-for-release as of January 11,2001.

b. Exceptions

There was one exception (E1020) related to OP-2. As discussed above, Qwest acknowledged the problems identified in that exception and has made changes to prevent its recurrence. Liberty closed Exception 1020 on December 11, 2000.

c. Observations

There were no observations related to OP-2.

d. Conclusions

OP-2 provides an accurate measure related to the timeliness of CLEC access to the Interconnect Provisioning Center. The timeliness of Qwest's response to CLEC calls to the Interconnect Provisioning Center is accurately compared to the timeliness of Qwest's retail customer access to call centers.

5. Recommendations

Liberty has no recommendation related to performance measure OP-2. Unless Qwest changes the method or process for timing the length of time to answer calls, there should be no need for future auditing. Normal monitoring of trends and levels of service should be sufficient to identify any potential problems that may arise in the future.

B. OP-3 – Installation Commitments Met, OP-4 – Installation Interval, OP-6 – Delayed Days

1. Introduction and Background

Performance measures OP-3, OP-4, and OP-6 are intended to help evaluate the timeliness of Qwest's service installations. These measures are reported together because of the similarity among the three of the data and processes used to report performance results. Timely installation of services by Qwest is important to local competition so that customers of CLECs can rely on promises to have services installed.

OP-3 provides a measure of the extent to which Qwest installs services for customers by the scheduled due date. The measure counts all orders for new or additional lines that have been assigned a due date and that were completed during the reporting period. Certain records, such as disconnect and record order types and dates missed due to customer-caused reasons are excluded from the measure. Qwest calculates the measure by dividing the total number of service orders completed on or before the due date by the total number of service orders completed during the reporting period. OP-3 has five sub-measures, and there is various product reporting within each sub-measure. For the month of November 2000, for example, Qwest's regional performance results report showed 70 separate, product-level measures under OP-3. Qwest is reporting all products except those referred to as advanced services such as line sharing and sub-loop unbundling, extended loops (EELs), and dark fiber. The standards for OP-3 are parity with retail, where such parity exists, or 90 percent, for products such as the unbundled analog loop where no parity product exists.

OP-4 provides a measure of the average length of time to install a service. Qwest calculates the measure by dividing the sum of the installation intervals in business-days by the total number of orders completed in the reporting period. The standards for OP-4 are parity with retail, where such parity exists, or 6 days, for products where no parity product exists. Otherwise, the description of OP-3 above applies to OP-4 as well.

OP-6 provides a measure of tardiness of late orders. Qwest calculates the measure by dividing the sum of the installation intervals beyond the original due date by the total number of late orders completed during the reporting period. OP-6 has an additional sub-division compared to measures OP-3 and OP-4. OP-6A measures orders that were late for non-facility reasons, and OP-6B measures orders that were late for facility reasons. For the month of November 2000, for example, Qwest's regional performance results report showed 133 separate, product-level measures under OP-6. For those products that Qwest is currently reporting results, the standard is parity with retail. For products that did not have a parity comparable for use in OP-3 and OP-4,

Qwest uses a substitute. As examples, for the unbundled analog loop, the retail comparable is residential and business POTS with dispatch and for ADSL-qualified loops, the retail comparable is Megabit with dispatch. Otherwise, the description of OP-3 above applies to OP-6 as well.

2. Overall Summary

OP-3, OP-4, and OP-6 can be released for OSS testing. There were no outstanding exceptions or observations related these measures as of the date of release.

3. Analysis

RSOR Process Overview

Service orders from Qwest's Eastern, Central, and Western regions are fed into RSOR. Qwest's regulatory reporting system then pulls service order data from RSOR into PANS databases. RSOR data are updated daily in these databases. To begin the process for reporting these provisioning measures, a program called *rsorext.sas* extracts data from PANS for the current month and the past sevens months. This is done to ensure that all records with a reference date in the current month are captured. Qwest reported that a test had been conducted to ensure that it need not go back further to capture relevant records. The test showed that over 99.9 percent of the records were captured using this method. The actual records pulled are those completed orders that are of the change, new, or transfer types.

The program *rsor.sas* actually generates the performance measures. It does this by using reference tables for things like CLEC and product identification, using auxiliary programs for things such as determination of business days, and matching data with TIRKS (trunk inventory) to designated designed services. The process generates a "detail" file that contains all the required information. *Rsor.sas* then performs data validations to determine which records should be included in the measurements. It flags records with, for example, missing or incomplete data elements according to various defined categories. The program includes these flags and various derived fields in an "ad hoc" file, which is then used to perform various comparison and calculations such as comparing commitment and completion dates, and calculating average installation intervals. Importantly, the same program operates on both wholesale and retail data.

Liberty's review of the RSOR process involved walk-throughs of the operation of these programs, detailed review of the actual program files, and independent replication of many of the programming steps through spreadsheet logical and conditional programming.

Common Exclusions

Liberty's analysis of OP-3, OP-4, and OP-6 included substantial review and evaluation of the processes used to create these performance measures, recalculation of selected result, and tracking data through from service order to reported results. In addition, Liberty examined the systems and controls used by Qwest to obtain accurate results, and analyzed the program code that is used to extract, classify, and process data. The evaluation included many interviews, requests for information, and analysis of raw service order data.

Early in the audit, Liberty realized that Qwest was excluding certain records beyond those identified in the PID from the totals used to determine results. Liberty initially documented this finding as Observation 1005. Excluded records consisted of two basic types. The first type involved limiting the database of records to those associated with the measure. For example, service orders involving internal official company services were appropriately excluded. The second type involved records in which either though errors, such as typographical mistakes, or the use of special dates to, for example, indicate order cancellation, the data could not be used in the measure. This matter was resolved through three efforts.

First, Qwest proposed, and the TAG approved, changes to the PID that more explicitly defined records that are excluded from the measure. For OP-3, OP-4, and OP-6, the additions to the PID were:

- Records involving official company services
- Records with invalid due dates or application dates
- Records with invalid completion dates
- Records with invalid product codes
- Records missing data essential to the calculation of the measurement per the PID.

The second effort to resolve this issue required Qwest to generate and Liberty to review data that showed the number of records excluded of the various types. Liberty wanted to make sure that excluded records of the type that were errors were not significant in number and that they would not have a significant effect on the result.

Qwest provided and Liberty reviewed data on common exclusions for the months of October and November 2000. Liberty found that after eliminating records for OP-3, OP-4, and OP-6 that did not apply for those measures, the number of records with invalid entries and mistakes were very small. For example, the RSOR exclusions for November are summarized in the following table and explained below.

	Wholesale		Retail	
	Number	Percent	Number	Percent
Total Number of Records	55,487		1,573,684	
Records Not Excluded	44,458	80.12%	1,042,451	66.24%
Records Not Inward Activity	8,825	15.90%	509,516	32.38%
Internal Office Orders	0	0.00%	1,718	0.11%
Total Valid Records/Percent Not Excluded	46,662	95.28%	1,062,450	98.12%
Records with Invalid Dates and other entries	2,204	3.97%	19,999	1.27%
D_Except 15 Original	660	1.19%	5,230	0.33%

D_Except 15 New	90	0.16%	1,125	0.07%
Invalid Completion Date	1,199	2.16%	4,824	0.31%

There were 55,487 records extracted from RSOR/PANS for consideration of November's wholesale results. Of these, 44,458 were actually used in the measurements. Records (8,825) that did not reflect inward activity were flagged and appropriately not used. Of the total number of records that applied to these measures (46,662), over 95 percent were counted. Records with invalid dates or other data problems such as invalid product codes totaled less than 4 percent of the total wholesale records. The largest individual category of these problem records were those with invalid completion dates, which accounted for just over 2 percent of the total wholesale records.

One of the exclusion types (D_Except 15) flags records that have an illogical interval between the application date and the entry date. Qwest had been flagging such records and not using them in the measurements if that interval was more than seven days or less than negative one day. During the course of the audit, Qwest agreed to change this interval to more than 31 days or less than negative 1 day, so that fewer records would be inappropriately excluded. As shown in the table above, this change did in fact reduce the excluded records, from 660 to 90 for November wholesale.

The third way that Liberty ensured that excluded records were not a problem was to review both the program code and the actual excluded records to (a) verify that all records for both wholesale and retail measurements were treated the same, and (b) check that the data available in the excluded records did not show a pattern that would have affected the results. Both of these checks proved satisfactory.

Product Disaggregation

Another problem discovered during the audit was that certain valid records were not included in the monthly performance results (Observation 1008). This had been caused by Qwest's method to sort orders and the fact that some orders had apparently conflicting designations relative to that method. Qwest reports the results for these performance measurements according to how they were categorized in the PID for each product type (*i.e.*, with either MSA-type or Zone-type disaggregation). MSA-type reporting is used for products that were considered to be non-designed (*i.e.*, requiring no engineering), and Zone-type reporting is used for products that were considered to be designed (*i.e.*, requiring some engineering). However, some products legitimately had both orders that are non-designed and orders that are designed and thus contribute data both for MSA-type reporting and for Zone-type reporting. For such products, orders that followed the provisioning process not specified in the PID were not reported. For these few products, this meant that some non-trivial volumes of orders were excluded from the measurements.

To resolve this problem, Qwest proposed and the TAG approved PID changes, and Qwest's methods were changed as follows:

1. Products listed in the PID for MSA-type reporting:
   a. Eliminate RSOR exclusion Type 10 (a non-designed product in a designed category).
   b. Report products with incidental order volumes in the other category (*i.e.*, those mis-classified as designed products) in the MSA category (the most prominent category).
   c. Revise the PID for any products listed for MSA-type disaggregation that legitimately involve orders with and without TIRKS circuit numbers to require MSA-type disaggregation for those without TIRKS entries and Zone-type disaggregation for those with circuit numbers in TIRKS. The product affected by this step was PBX.
2. Products listed in the PID for Zone-type reporting:
   a. Eliminate RSOR exclusion Type 9 (a designed product in a non-designed category).
   b. Report products with incidental order volumes in the other category (*i.e.*, those mis-classified as being non-designed products) in the Zone 1 category (the most prominent category).
   c. Revise the PID for any products listed for Zone-type disaggregation that legitimately involve orders with and without TIRKS circuit numbers to require Zone-type disaggregation for those with TIRKS circuit numbers and MSA-type disaggregation for those without TIRKS entries. The products affected by this step were DS0, ISDN-BRI, ISDN-PRI, and Unbundled Loops-Analog.
3. Products listed in the PID for both MSA-type and Zone-type reporting:
   a. Continue to report MegaBit under both disaggregation types.
   b. As explained in the first two categories, revise the PID to require that PBX, DS0, ISDN-BRI, and ISDN-PRI be reported under Zone-type and MSA-type disaggregations according to whether the order is in TIRKS.

Qwest's response to Liberty's Observation 1008 also provided an assessment of the results of the changes and answered several questions aimed at assuring that the changed reporting methods were valid. Liberty found Qwest's explanations and analyses to be valid.

UNE-P Orders Involving Dispatch

Liberty discovered that Qwest had not been reporting results for UNE-P orders that involved dispatch (Observation 1013). This affected measures OP-3A, OP-3B, OP-4A, OP-4B, OP-6A1, and OP-6A2. Qwest confirmed that the logic originally identified as the means to distinguish UNE-P from conversions was not always working correctly. As a result, there were only a few UNE-P orders showing up in the reported results. Qwest added new fields that would specify dispatch activity on UNE-P orders. These fields enabled Qwest to distinguish and report separately on dispatch activity for all new UNE-P orders.

Recalculation and Data Tracking

Because of the large number of service records involved in these measures, Liberty's recalculation of performance results was limited to wholesale records for selected months and states. Liberty judged this to be an acceptable audit method after ensuring that Qwest's programs worked the same way on retail records, on records with other state designations, and for all products. Data tracking involved detailed tracking of the records concerned the in measures listed in the table below from the PANS database, and selected service orders from order processors to the performance result. The following table shows the specific recalculations that were performed. In all cases Liberty's results matched those reported by Qwest.

Measure	State	Month	Product(s)
OP-3A	Montana	July 2000	Residence/Business
OP-3A	New Mexico	October 2000	Residence/Business
OP3B	Montana	July 2000	Residence/Business
OP-3B	New Mexico	October 2000	Residence/Business
OP-3C	Montana	July 2000	Residence/Business
OP-3C	New Mexico	October 2000	Residence/Business
OP-3D	Montana	July 2000	UBL ISDN
OP-3D	New Mexico	October 2000	UBL ISDN
OP-3E	Montana	July 2000	UBL ISDN
OP-3E	New Mexico	October 2000	UBL ISDN
OP-4A	Montana	July 2000	Residence/Business
OP-4A	New Mexico	October 2000	Residence/Business
OP-4B	Montana	July 2000	Residence/Business
OP-4B	New Mexico	October 2000	Residence/Business
OP-4C	Montana	July 2000	Residence/Business
OP-4C	New Mexico	October 2000	Residence/Business
OP-4D	Montana	July 2000	UBL ISDN
OP-4D	New Mexico	October 2000	UBL ISDN

OP-4E	Montana	July 2000	UBL ISDN
OP-4E	New Mexico	October 2000	UBL ISDN
OP-6A1	Montana	July 2000	Residence/Business
OP-6A1	New Mexico	October 2000	Residence/Business
OP-6A2	Montana	July 2000	Residence/Business
OP-6A2	New Mexico	October 2000	Residence/Business
OP-6A3	Montana	July 2000	Residence/Business
OP-6A3	New Mexico	October 2000	Residence/Business
OP-6A4	Montana	July 2000	UBL ISDN
OP-6A4	New Mexico	October 2000	UBL ISDN
OP-6A5	Montana	July 2000	UBL ISDN
OP-6A5	New Mexico	October 2000	UBL ISDN
OP-6B1	Montana	July 2000	Residence/Business
OP-6B1	New Mexico	October 2000	Residence/Business
OP-6B2	Montana	July 2000	Residence/Business
OP-6B2	New Mexico	October 2000	Residence/Business
OP-6B3	Montana	July 2000	Residence/Business
OP-6B3	New Mexico	October 2000	Residence/Business
OP-6B4	Montana	July 2000	UBL ISDN
OP-6B4	New Mexico	October 2000	UBL ISDN
OP-6B5	Montana	July 2000	UBL ISDN
OP-6B5	New Mexico	October 2000	UBL ISDN

4. Findings and Conclusions

a. Performance Measure Release Date

OP-3, OP-4, and OP-6 were considered as ready for release as of February 21, 2001.

b. Exceptions

There were no exceptions related to these performance measures.

c. Observations

There were four observations related to these performance measures. Observations 1005, 1008, and 1013 are discussed in the analysis section above. Observation 1005 applied to many performance measures; it is closed for the purposes of OP-3, OP-4, and OP-6. Observations 1008 and 1013 have been closed. Liberty withdrew observation 1014 on December 21, 2000 on the basis of Qwest's explanation of the method used to exclude orders delayed due to customer-caused reasons. After the release of OP-4, Liberty issued Observation 1022, which noted a potential problem with comparability between wholesale and retail due to expedited provisioning that may be available to CLEC wholesale orders. Liberty discussed this matter with Qwest and investigated Qwest's systems and ordering history. Liberty confirmed that Qwest does not track expedited order activity and could not provide data that would detail the percentage of total order activity is comprised of expedited orders. However, Qwest did have information on the volumes of orders completed in less than standard installation intervals. This data would include all expedited order activity, because expedited orders would, by definition, be completed in less than the standard installation interval. This data would also include orders completed for other reasons in less than the standard installation interval. For example, in June 2001, data for shorter than standard interval installations show that for both wholesale and retail orders, less than 1 percent were completed in less than the standard interval. Since expedited orders are less than 1 percent of all order activity, both on the retail and wholesale side, such orders cannot skew significantly performance results. Therefore, Liberty closed Observation 1022.

d. Conclusions

OP-3 provides an accurate measure related to the extent to which Qwest's meets installation commitments. OP-4 provides an accurate measure of the average time required by Qwest to install services. OP-6 provides an accurate measure of the extent to which late orders are completed beyond the committed due date.

5. Recommendations

Qwest should regularly track the number of records that are excluded for various reasons. If during any reporting period there is a significant change from previously observed percentages of the total number of records, Qwest should investigate the reasons for such change. This will provide an additional check on the integrity of the data. On the basis of its review of excluded records, Liberty sees no reason to make this a separate performance measure, but rather should be an internal Qwest check for the reasonableness of reported results.

Also after the release of these measures, Qwest planned to develop a method to use revised due dates on orders for which the customer requested a later date. After approval of the related change to the PID, the TAG requested that Liberty audit this change. Liberty reviewed this matter with Qwest's regulatory reporting group and with the responsible programmers. However, there were delays in actually implementing the change and Liberty did not complete its audit of this particular aspect of the affected measures. Liberty recommends that this change be examined in some future audit or review of the performance measures.

C. OP-5 – New Service Installation Quality

1. Introduction and Background

Performance measure OP-5 is intended to help evaluate the quality of ordering and installation of services by reporting the percentage of average monthly new order installations that were free of trouble reports for the first 30 days. It is important that customers who switch carriers not have service problems soon after the change of carriers.

OP-5 reports the monthly average percentage of new installations that are free of trouble reports within 30 calendar days of initial installation. The number of new installations used in both the numerator and denominator of the formula for OP-5 is the average of the current and prior months' inward orders including change orders for additional lines. The number of trouble reports used in the numerator is the total of all trouble reports closed during the reporting period and that were received within 30 days of the date of original installation.

There are some unique characteristics of OP-5 that should be known to those who may use the measure's results. The number of trouble reports used in this measure is reported on a per-line basis, while the number of orders used in the measure is reported on a per-order basis. It is possible that for a particular state and product, the number of trouble reports could exceed the average number of orders and thus produce a negative result. Qwest's program limits the numerator to a minimum of zero. A single-line installation could have multiple troubles within the first 30 days, and thus bias the OP-5 result downward. However, a single installation order could involve multiple lines or circuits, and troubles could be experienced on separate lines or circuits within the first 30 days.

Certain types of trouble reports are excluded from the measure. These are specifically identified in the PID and relate to non-Qwest problems such as those caused by customer-owned equipment, troubles beyond the network interface, and customer actions. In addition, if a subsequent trouble report is received before the original trouble report is closed, the subsequent report is not counted in the measure. The PID also lists specific types of orders that are excluded from the measure. These are the same types that were listed for measures OP-3, OP-4, and OP-6, such as invalid due dates and invalid product codes.

OP-5 is reported on a product-basis, including resale products such a residential single line service and centrex, unbundled dedicated transport, and various types of unbundled loops. All of the products are listed in the PID. Qwest indicates that it is reporting on all products except advanced services such as dark fiber and extended loops. Qwest began reporting for line sharing starting with the January 2001 results. The standard for measurement is parity with a comparable

retail service, except for those same advanced-services products, which are diagnostic measures. These standards are also listed out in the PID.

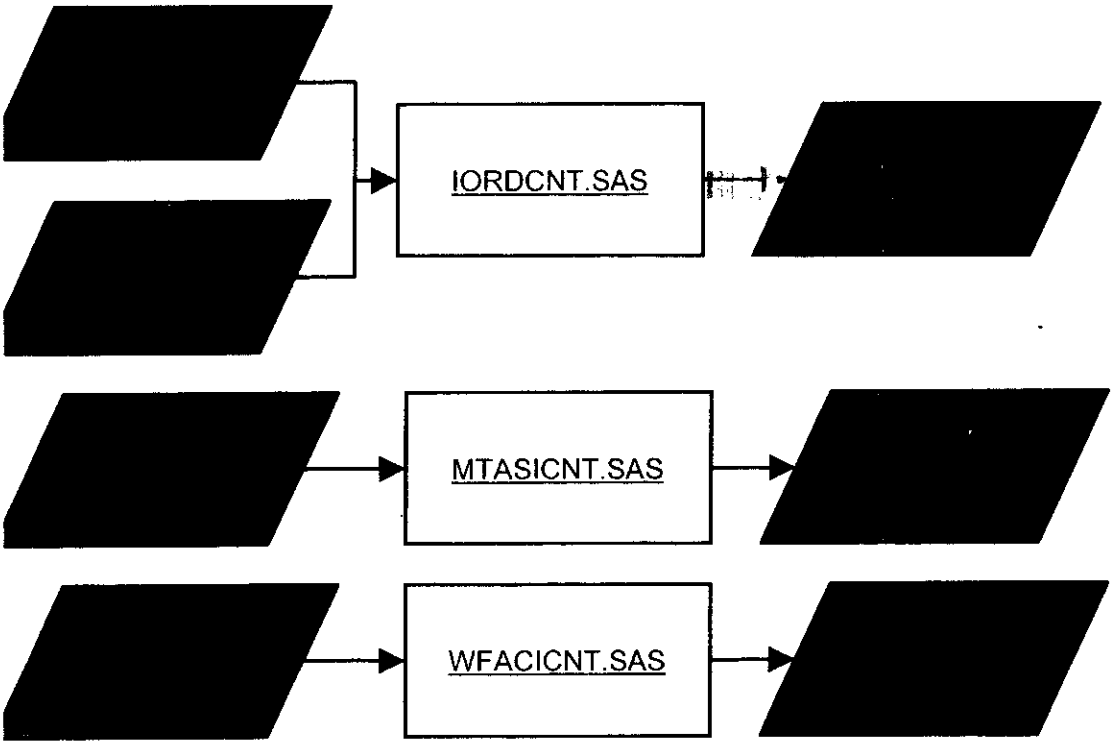
2. Overall Summary

OP-5 can be released for OSS testing. There are no outstanding exceptions or observations related these measures.

3. Analysis

Data Flow

Data related to new service installation quality exist in the "ad hoc" files created by SAS programs for customer records management, and trouble reports from MTAS and WFAC. The program *iordcnt.sas* processes the CRM *ad hoc* to count instances of new service installation. The programs *mtasicnt.sas* and *wfacicnt.sas* process the MTAS and WFAC *ad hoc* files to count instances of trouble reports. Another program called *speccalc.sas* creates the two-month average of service orders.



Liberty's review of this process involved walk-throughs of the operation of these programs, detailed review of the actual program files, and independent replication of many of the programming steps through spreadsheet logical and conditional programming.

Product Disaggregation

A problem discovered during the audit was that certain valid records were not included in the monthly performance results (Observation 1008). This had been caused by Qwest's method to sort orders and the fact that some orders had apparently conflicting designations relative to that method. The release report for OP-3, OP-4, and OP-6 describes this observation in some detail. However, OP-5 has some unique aspects since it deals with both repair processes and provisioning processes. It is calculated by merging like groupings (either MSA-type or Zone-type) of repair and provisioning data sources. For example, DS0 is specified as a Zone-type product. Therefore Qwest uses WFAC repair data, indicating Zone-type activity, in the

numerator and RSOR provisioning data for Zone-type DS0 activity in the numerator and denominator. However, in September 2000 for example, while 100 percent of repair activity for DS0 came through WFAC, only 85 percent of the RSOR DS0 activity fell into the Zone-type category, while the remainder fell into the MSA-type category. This meant that the provisioning data source feeding OP-5 was under-reported by 15 percent in comparison to the repair data source feeding the numerator. This caused the OP-5 result to be artificially deflated.

Originally, Qwest proposed to report OP-5 in a disaggregated fashion much like that used for OP-3. However, the numerator uses repair data, which does not have combinations or mixtures of both MSA-type and Zone-type orders, but the rest of the formula uses provisioning data which, for several products, does have mixtures of MSA-type and Zone-type orders. This problem was addressed by revising the PID to show that OP-5 would be reported without MSA-type or Zone-type disaggregations (*i.e.*, on a statewide basis). This solution permitted the matching of repair and provisioning data at the lowest disaggregation level possible for all products. The OP-5 program adds the MSA-type and Zone-type order activity together for OP-5.

Qwest's program for accumulating the required data for the various products had included an error that prevented the reporting of results for the Megabit product. Qwest explained the problem to Liberty and reported that it affected no other products or measures. Qwest began reporting results for OP-5 and Megabit in the report that included January 2001 results.

Recalculation and Data Tracking

Liberty recalculated and duplicated Qwest's results for one state and all products. Liberty also verified that Qwest's results for another state tracked through the process and that Qwest's results were accurately reported in the monthly performance report. Liberty's walk-through of the programs verified that they operated the same on wholesale and retail data.

During the audit, Liberty discovered that Qwest had not been calculating OP-5 using the average number of service orders for the current and prior months (Exception 1029). Qwest corrected this problem.

4. Findings and Conclusions

a. Performance Measure Release Date

OP-5 was considered as ready-for-release as of March 8, 2001.

b. Exceptions

Exception 1029 noted that Qwest was not using the average of the current and prior months' service orders for OP-5. Qwest corrected that error.

c. Observations

There were two observations related to OP-5. Observation 1005 related to common exclusions. This matter is discussed in the release report for OP-3, OP-4, and OP-6. The specific exclusions are now listed in the OP-5 PID. Observation 1008 is discussed in the analysis section above.

d. Conclusions

OP-5 provides an accurate measure related to the quality of new installations.

5. Recommendations

Liberty has no recommendations related specifically to OP-5.

D. OP-7 – Coordinated Hot Cut Interval–Unbundled Loop

1. Introduction and Background

Performance measure OP-7 is a diagnostic measure intended to help evaluate Qwest's efficiency in moving the service of existing customers from Qwest's switches or frames to the CLEC's equipment. OP-7 reports the average time to complete coordinated "hot cuts" for unbundled loops by using the interval between the "lift" time and the completion time of Qwest's applicable tests for the loop. The formula for this measure in the PID is:

> *Σ[(Completion time – Lift time)] / (Total Number of unbundled loops with coordinated cutovers completed in the reporting period)*

The PID defines the terms in the formula as follows:

> *"Lift" time is defined as when Qwest disconnects the existing loop.*
>
> *"Completion time" is defined as when Qwest completes the applicable tests after connecting the loop to the CLEC.*

Thus, the total of the minutes between lift and completion for each unbundled loop constitutes the numerator of OP-7. The denominator is the total number of unbundled loops with coordinated cutovers during the reporting period.

The PID lists specific types of exclusions for OP-7. Two of these are the same type listed for measures OP-13A and OP-13B: invalid due dates/times or invalid start/stop dates, and records missing data essential to the calculation of the measure. A third exclusion specifies that the time associated with CLEC-caused delays be excluded from the interval. OP-7 is reported on a product basis, both for analog loops and for all other types of loops. It is disaggregated to the state level, as well as to the individual CLEC level.

2. Overall Summary

OP-7 can be released for OSS testing. There are no outstanding exceptions or observations related to this measure.

3. Analysis

During a visit to the Des Moines Center in September 2000, Liberty conducted several interviews and observed the data recording done during the cutover process. Liberty also reviewed the process used to create the unbundled loop database and reviewed the algorithms employed by Qwest's Regulatory Reporting to calculate the unbundled loop performance measures for July 2000 from this database. Liberty's analysis revealed several problems with OP-7, both in terms of the quality of the data used to calculate the measure as well as Qwest's definition and use of exclusions. This analysis led to two exception reports related to OP-7, wherein Liberty concluded that the reported results for July 2000 were inaccurate.

Qwest subsequently implemented improvements in the business processes used to collect data, and sought changes to the PID to incorporate the exclusions it had been using. Liberty has determined that Qwest has satisfactorily resolved the issues raised by Liberty in the exception reports (see the discussion of exceptions below). Liberty re-examined the unbundled loop database and reported results for January 2001, and held discussions with Qwest's Regulatory Reporting personnel regarding open issues or questions. Liberty recalculated and duplicated Qwest's January 2001 regional results, as well as results for several states and individual CLECs.

4. Findings and Conclusions

a. Performance Measure Release Date

OP-7 was considered ready-for-release as of April 6, 2001.

b. Exceptions

There were two exceptions (E1014 and E1016) regarding this performance measure.

In Exception 1016, Liberty pointed out that Qwest was not excluding CLEC-caused delays in the cutover process from its calculation of the average interval as defined in the PID. Qwest has since clarified that there can be no CLEC-caused delays in the interval as Qwest defines it; once Qwest has lifted the first loop, it cannot experience delays caused by the CLEC until after it has laid the last loop and completed applicable tests. Qwest has also clarified that its definition of "lay time" is consistent with the PID definition of "completion time," since the lay time recorded by Qwest reflects the conclusion of any appropriate testing.

Liberty also pointed out that Qwest was omitting lines with missing or invalid lift/lay times from the OP-7 calculation, and that this exclusion was not identified in the PID. Qwest had subsequently received approval to add as exclusions for both OP-7 and OP-13: (1) any records with missing data essential to the calculation, and (2) any records with invalid start/stop dates/times or invalid scheduled date/times. The algorithm used by Qwest to calculate OP-7, as summarized in its Business Requirements document, excludes items with missing lift or lay times, or those with lift times later than lay times *(i.e.*, invalid or nonsense entries). Qwest's algorithm now correctly reflects the permissible exclusion for records with missing data necessary to the calculation, *i.e.*, lift and lay times. It also reflects exclusions for invalid start/stop times, with lift and lay times being considered as the only relevant start/stop times examined for the OP-7 calculation. The algorithm does not, however, screen for and exclude lines with invalid scheduled dates/times, or for invalid cutover start/stop times, which is different from how this

exclusion is interpreted by Qwest for the OP-13 measures. Qwest has acknowledged the differing treatment of this exclusion under OP-7 and OP-13, and has no plans to make the application of this exception consistent across the measures. Liberty therefore understands that there are no exclusions made for OP-7 relating to invalid scheduled date/times or cutover start/stop times, but only for missing or invalid lift and lay times.

For an LSR with multiple loops, Qwest's testers record the time of the first lift on the first line and the lay time on the last line. Liberty had originally noted that Qwest had used the lift and lay time of the first line of a multi-line LSR to calculate the average interval for each individual line in that LSR. The process has changed slightly since September. The OP-7 algorithm now calculates the time for each line in an LSR differently, by dividing the lay minus lift time recorded on *each* line (meant to represent the cutover duration for the total LSR) by the number of lines in that LSR. Data errors (such as different or zero lift/lay times for individual lines within an LSR) will therefore cause distorted results for multi-line LSRs due to the calculation algorithm used by Regulatory Reporting. If there are relatively few data points for a given CLEC or state, the impact on the result can be significant. Qwest has taken a reasonable approach to calculating the average number of minutes for lines in a multi-line LSR, even though its algorithm cannot compensate for those cases where each line in an LSR does not have the same lift and lay times recorded. Except for this anomaly, the algorithm calculates the average interval accurately.

Exception 1014 related to the overall quality of the data used to calculate OP-7 and OP-13. The basic process for capturing data relating to hot cuts that Liberty observed in Des Moines in September 2000 has, to a large degree, not changed significantly. Testers still enter manually information collected during the cutover process into the WFA-C system. A data specialist still creates an unbundled loop database using extracted information from WFA-C, TIRKS, and the CRM system and by manually re-entering into the database the same data entered into WFA-C by the testers. What has changed since Liberty's visit is that management has implemented much more extensive training and coaching of testers regarding data entry, and the centers have begun to retain paper copies of the information entered into WFA-C, *i.e.*, hard copies of the data input screens so that missing data or errors may possibly be corrected at a later time if an error or missing information is caught by the data specialist or Regulatory Reporting.

The data entry system does not mandate entry of data or check specific data items, although Qwest had introduced some pop-up windows to prompt the tester during the data input process. Qwest has also revised its OSSCN form used by testers to record data during the cutover process before they enter the data into WFA-C, adding several areas for information to be noted regarding early cuts, approvals, and CLEC delays (but not the length of these delays). The improved form should help testers capture data more accurately and thoroughly during the cutover process. Qwest also relies on the personnel reviewing the data to identify possible errors or missing entries.

On the basis of its review of July 2000 data and observation of data collection during the cutover process, Liberty had concluded that data input errors and oversights were not uncommon. The quality of data has improved significantly since that initial review. The improvements had been slowed due to the fact that centers other than Des Moines are now entering data, and each new center had its own learning curve with respect to data quality. Starting with the January 2001 data, Liberty observed far less missing data (such as lift/lay times, start/stop times, and CLEC contact names/phone numbers) and fewer invalid or nonsense data entries. For the most part,

mistakes of this type that occur now should have a negligible effect on reported results for OP-7. In a few cases, however, data entry errors could still have a sizable effect on reported results, as noted above, where null or differing entries under lift/lay times for one or more lines within a multi-line LSR could skew results on the state/CLEC level.

c. Observations

There were no observations related to OP-7.

d. Conclusions

OP-7 provides an accurate measure related to the efficiency of completing coordinated hot cuts.

5. Recommendations

Due to the sensitivity of certain disaggregated results to the effects of bad data, Liberty recommends that Qwest closely monitor the individual CLEC- and state-level results for OP-7. Specifically, Qwest should isolate those results that are based on relatively few data points. Qwest should review the data used to calculate these results to ascertain if the data quality errors discussed above, *i.e.*, differing lift/lay times or zero times for individual lines within a given LSR, in fact exist. To the extent that errors do exist, Qwest should manually recalculate and report the results for the given CLEC or state.

Qwest needs to continue its efforts to ensure that manually recorded data are captured accurately and completely. Any future reviews or monitoring of OP-7 should focus in part on the quality and completeness of the raw input data.

E. OP-8 – Number Portability Timeliness

1. Introduction and Background

Performance measure OP-8 is intended to help evaluate Qwest's timeliness in providing cutovers of number portability. A key to robust local competition is the ability of customers to retain their telephone number when they switch local carriers. To accomplish local number portability *(LNP)*, Qwest must set switches called triggers for the telephone number of a customer changing carriers. An LNP trigger may also be referred to as a Line-Side-Attribute. If a trigger was not set prior to the time of the change in service provider, callers would not be able to reach the customer at the original telephone number.

OP-8 consists of two sub-measures to differentiate between LNP associated with a coordinated cutover of a loop (OP-8B) and LNP for which coordination with a loop cutover was not requested (OP-8C). More specifically, the PID requires that OP-8B measures all orders for LNP coordinated with unbundled loops that are completed during the monthly reporting period. OP-8C measures all other orders for LNP completed during the reporting period including standalone LNP coordinated with other than Qwest-provided unbundled loops and non-coordinated LNP. Both sub-measures are subject to specific exclusions identified in the PID. Both are expressed as a percentage of the total LNP like-kind activations completed in the

period. Both have a standard of 95 percent.

2. Overall Summary

OP-8 can be released for OSS testing. There are no outstanding exceptions or observations related to this measure. OP-8 should be thoroughly reviewed again in the future because of the very early stage of the processes used to report results.

3. Analysis

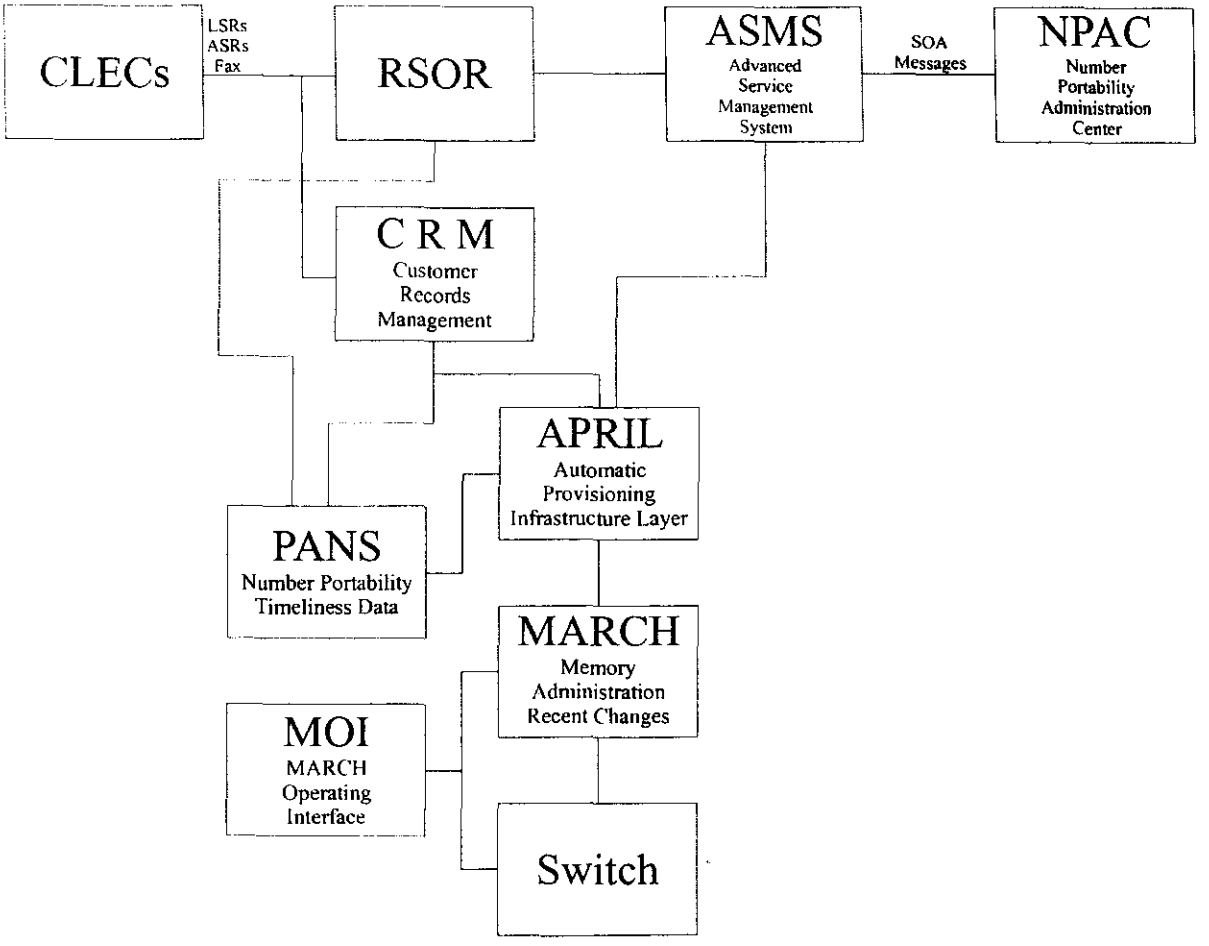
When Liberty's audit began, Qwest's method for collecting and using the data required for OP-8 was practically all manual. Qwest had a team of data personnel that used information from customer records management, and collected corresponding information from service order processors and trigger set data from a system called MOI *(March Operating Interface)*. A second Qwest team checked the manual actions of the first team. After auditing the process and methods that Qwest used for OP-8, Liberty decided it could not conclude that the measure accurately reported actual performance. (See Exception 1003 below.)

The number of steps involved with the manual querying of data and the re-typing of that data in Excel Spreadsheets meant that the number of occurrences of mis-typing and other manual errors increased the possibility of incomplete and inaccurate information. Retrieval of the required data directly from the appropriate systems and reducing the manual intervention in the collection of data would reduce the opportunities for error.

Qwest completed the development of a new process to replace most of the manual activities with an automated method for assembling and calculating OP-8. There are tens of thousands of records that affect OP-8 each month, the ability to use a computerized process for gathering and comparing telephone numbers, completion dates and times, purchase order numbers, and the like was important for economically measuring LNP timeliness. Qwest reported results from the new process starting with the results for the month of October 2000.

Liberty's early audit of OP-8 also noted that many records of LNP were being counted against Qwest's performance, not because triggers were set late, but rather because Qwest could not identify certain LNP requests with automated triggers. Process computerization and PID changes that specifically identify data records that are excluded corrected these problems.

The diagram below is a simplified sketch showing some of the parties and systems involved in collecting the data necessary for the OP-8 measures.



There are both automated and manual, daily and monthly processes used for this measure. The daily process attempts to match ported telephone numbers with service order information, switch type data, and the requisition type from customer records. The Number Portability Administration Center system *(NPAC)* and Advanced Service Management System *(ASMS)* both provide user interfaces to initiate and maintain customer requests for an LNP action. The Automatic Provisioning Infrastructure Layer *(APRIL)* system creates a file containing the telephone numbers and other data relating to the LNP request, and sends it to the Memory Administration of Recent Changes *(MARCH)* system, which actually make the change on the switch. Records with no service order completion date are retained in a PANS database. Each month these records are matched with service order information to see if a valid completion date has been added. Daily, data from the automated process are e-mailed to the Wholesale Regulatory Reporting Group, which attempts to find order information for the ported telephone numbers in cases where that data could not be obtained from the automated process. When they can successfully find the missing order data, it is saved and merged with the monthly files from the automated process. Finally, information from the coordinated hot cut center in Des Moines is used to distinguish those telephone numbers that were ported with a coordinated loop from all others and tests are completed to determine if trigger set date and time were before the service order completion date and frame due time or CLEC due time.

The processes required to report OP-8 are complex. Qwest's efforts to automate those processes are appropriate. However, those processes are still being refined. For example, the reported

results that included November as the latest month were in error because the manually processed records did not get included. (Liberty's recalculation of the corrected results for November showed them to be correct.) Also, characteristics of this measure that are out of Qwest's control have the potential to lead to errors. For example, many of the telephone numbers that are reported twice a day are duplicates that must be eliminated and many requests for LNP are subsequently cancelled. Qwest is aware of these characteristics, but to the extent manual processes are still in place, errors could occur.

Liberty's analysis of OP-8 included review and observation of the manual processes, review of the SAS code used in the automated processes, tracking data from the daily telephone number inputs to the daily files and to the final monthly data that support results, recalculation of the results reported for December 2000, and the corrected results for prior months. Liberty duplicated Qwest's results. However, Liberty found that Qwest's process documentation did not correctly describe the logic used for determining whether the commitment had been met for the case of equal set and due dates for OP-8B.

Liberty assessed the number and type of records excluded from the measure to ensure that they were occurring randomly and that their nature would not skew the results. As an example, the completed records for the month of December totaled 65,443. Nearly 28 percent (18,260) were actually cancelled orders. About 15 percent (9,514) of the records were LNP requests without automatic triggers. These were so classified because of technical reasons such as the type of central office switch involved, special translations numbers, remote call forwarding, and DID provisioning for the 5ESS switch. Another 30 records indicated that the request was not for an existing service. The numbers for November were very similar.

4. Findings and Conclusions

a. Performance Measure Release Date

OP-8B and OP-8C were considered as ready for release as of February 22, 2001.

b. Exceptions

There was one exception, E1003, related to OP-8. It dealt with problems with the all-manual processes and excluded data that was not specifically identified in the PID. Liberty closed that exception on February 1, 2001 on the basis of clarifications made by Qwest, PID changes approved by the TAG, and Liberty's continuing audit activities.

c. Observations

There were no observations related to OP-8.

d. Conclusions

OP-8 appears to provide a reasonably accurate measure related to the timeliness of local number portability. The processes used to report OP-8 have only recently been settled, and Qwest is likely to improve those processes to more fully automate data collection. Performance results on at least two occasions were either reported inaccurately or could not be reported at all. The regulatory reporting system documentation is not completely accurate.

5. Recommendations

Liberty recommends that OP-8 be considered a candidate for a thorough review at some time in the future. Qwest should routinely report on any changes it has made in the processes used for OP-8 and any problems with the reported results that is has found. The timing of the future review should be determined on the basis of Qwest's reports and the confidence it has gained from a stable process and consistently reported results. Qwest should also review and correct wherever appropriate the process documentation immediately.

F. OP-13A – Coordinated Hot Cuts On Time – Unbundled Loop

1. Introduction and Background

Performance measure OP-13A is intended to measure the percentage of LSRs for coordinated cuts of unbundled loops that are completed on time, focusing on cuts completed within one hour of the committed order due time. For LSRs to be considered "on time," the CLEC must agree to the start time, and Qwest must (1) receive verbal CLEC approval before starting the cut or lifting the loop, (2) complete the physical work and appropriate tests, (3) complete the Qwest portion of any associated LNP orders, and (4) call the CLEC with completion information, all within one hour of the committed order due time. The formula for this measure in the PID is:

> *(Count of LSRs for coordinated unbundled loop cuts completed "on time") / (total number of LSRs for coordinated unbundled loop cuts completed in the reporting period) x 100*

Relevant terms in the definition for OP-13A are further defined in the PID as follows:

> *"Committed order due time" is based on the number and type of loops involved in the cut and is calculated by adding the applicable time interval from the following list to the scheduled start time:*
>
> *For analog unbundled loops:*
>
> *1 to 16 lines: 1 hour*
>
> *17 to 24 lines: 2 hours*
>
> *25+ lines: Project (not included in OP-13A)*
>
> *For all other unbundled loops:*
>
> *1 to 5 lines: 1 hour*
>
> *6 to 8 lines: 2 hours*
>
> *9 to 11 lines: 3 hours*
>
> *12 to 24 lines: 4 hours*
>
> *25+ lines: Project (not included in OP-13A)*
>
> *"Scheduled start time" is defined as the confirmed appointment time (as stated on the FOC) or a newly negotiated appointment time.*

In cases where Qwest's records are missing evidence of CLEC approval of the cutover, the LSRs will be counted as a "miss" under OP-13A.

The PID lists four specific types of exclusions for OP-13A and -13B. Two of these, records with invalid start/stop dates/times or scheduled dates/times, and records missing data essential to the calculation of the measure, are also applicable to OP-7 (but treated differently). "Projects," or LSRs involving 25 or more lines, are also excluded under OP-13A. The last exclusion specifies that records with invalid completion dates be excluded.

There are three additional exclusions that pertain exclusively to OP-13A. First, time intervals following the scheduled start time or during the cutover process associated with CLEC-caused delays are to be excluded. LSRs whose start was delayed 30 minutes or more after the appointment time because the CLEC was not ready are also to be excluded from the measure. Finally, LSRs that involve CLEC-requested non-standard methods, processes, or timelines are to be excluded. Typically, these are projects, but the terms are somewhat broader in that they allow the exclusion of any LSRs that are associated with trials. OP-13A is reported on a product basis, both for analog loops and for all other types of loops. It is disaggregated to the state level, as well as to the individual CLEC level. The standard for OP-13A is 95 percent or more.

2. Overall Summary

OP-13A can be released for OSS testing. There are no outstanding exceptions or observations related to these measures.

3. Analysis

During a visit to the Des Moines Center in September 2000, Liberty conducted several interviews and observed the data recording done during the cutover process. Liberty also reviewed the process used to create the unbundled loop database and reviewed the algorithms employed by Qwest's Regulatory Reporting to calculate the unbundled loop performance measures for July 2000 from this database. Liberty's analysis revealed several problems with OP-13A, both in terms of the quality of the data used to calculate this measure as well as Qwest's definition and use of exclusions. This analysis led to two exception reports related to OP-13A, wherein Liberty concluded that the reported results for July 2000 were inaccurate.

Qwest subsequently implemented improvements in the business processes used to collect data, and sought changes to the PID to incorporate the exclusions it had been using. Liberty re-examined the unbundled loop database and reported results for January 2001, and held discussions with Qwest's Regulatory Reporting personnel regarding open issues or questions. Liberty found that Qwest had not fully captured the exclusions for OP-13A; Qwest then agreed to make changes to its algorithm to incorporate Liberty's concerns. Liberty subsequently determined that Qwest had satisfactorily resolved the issues raised by Liberty both in the exception reports (see the discussion of exceptions below) and during the latest set of discussions. Liberty recalculated and duplicated Qwest's January 2001 regional results, as well as results for several states and individual CLECs.

4. Findings and Conclusions

a. Performance Measure Release Date

OP-13A was considered ready-for-release as of April 7, 2001.

b. Exceptions

There were two exceptions regarding this performance measure, E1014 and E1017.

In Exception 1017, Liberty identified a number of definition and exclusion problems relating to OP-13A. In particular, Qwest had been using a convention of a 30-minute window to measure whether it "started on time." Qwest is no longer using this convention. Also, Liberty stated that Qwest should use the scheduled order due time to calculate the interval to be compared to the standard. Qwest has taken another approach, using elapsed minutes, to compare to the "committed order due time" standard plus one hour. This treatment is consistent with the PID, insofar as the original scheduled appointment time is not considered to be the mandatory starting time for the cutover.

Liberty noted that Qwest had not been able to capture the time spent in CLEC delays, and simply treated all time between start and stop times as under Qwest's control. It also could not determine whether late start times were the result of CLEC delay, and treated LSRs with start times more than 30 minutes late as a "miss." Qwest had also excluded LSRs with more than 25 lines, which was inconsistent with the PID at that time. Qwest began to implement some changes in its data collecting and to its OP-13A algorithm in August 2000, including adding a "CLEC-issue" flag. Qwest's interpretation of the PID continued to evolve over time.

Like OP13-B, the PID now states that LSRs with no evidence of CLEC approval of the cutover process will be treated as a "miss;" thus, any item that is a "miss" under OP13-B would automatically be a "miss" under OP-13A. When Liberty reexamined OP-13A data for January 2001, it found that the algorithm used by Regulatory Reporting to generate OP-13A was missing logic that checked whether LSRs that were not cut early had CLEC approval. This problem was relatively minor, in that it affected only four LSRs in January; Qwest subsequently corrected the logic.

As noted in Liberty's Performance Measure Release Report on OP-13B, Qwest sought the addition of several new exclusions applicable to OP-13A and OP13-B. In particular, exclusions now include: (1) LSRs with more the 25 lines, (2) records with invalid completion dates, (3) records with missing data essential to the calculation, and (4) records with invalid start/stop dates/times or invalid schedule date/times. When Liberty originally reviewed the January 2001 results, it found that Qwest had not fully implemented the programming for these exclusions. After discussions with Qwest, the company included the logic in the calculation of both OP-13A and OP-13B for these exclusions. Qwest's Regulatory Reporting personnel indicated to Liberty that the exclusions would be treated the same under both OP-13A and OP-13B, so that OP-13B would more closely represent a diagnostic of OP-13A. A fuller discussion of these issues is contained in Liberty's release of OP-13B.

Specific exclusions in the PID under OP13-A remained the same in the latest version of the PID. These specify that LSRs be excluded for loop cuts that involve CLEC-requested non-standard

methods, process, or timelines, and when the CLEC is not ready to start by 30 minutes after the appointment time. Time intervals following the scheduled start time or during the cutover process associated with CLEC-caused delays are to be excluded from the calculated interval used to compare to the PID standards. Qwest now has the capability to capture delay start and stop times in its records, and its algorithm correctly subtracts the time spent in CLEC-delay from the calculated cutover duration. Qwest also implemented an addition to its algorithm to exclude LSRs with CLEC not ready by 30 minutes after the appointment time. In particular, Qwest now checks for LSRs with a CLEC issue that have a delay start time the same as the scheduled due time (which would imply that there was a delay at the start). If the duration of the delay is greater than 30 minutes, then Qwest will exclude the LSR from OP-13A. Currently, Qwest does not process LSRs that have non-standard methods, process, or timelines; the exclusion currently allows Qwest to exclude LSRs associated with trials. Overall, Qwest's algorithm for OP-13A now accurately reflects the exclusions in the PID.

During discussions with Liberty, Qwest agreed to updates its Business Requirements document as necessary to correlate with the changes made to the algorithm. Qwest subsequently recalculated and republished results for January 2001 data that incorporated the changes noted above. Liberty successfully validated those results against the new algorithm for OP-13A.

It should be noted that Qwest currently does not have the capability to make changes to the scheduled due date or scheduled time in the WFA-C system. Qwest simply records the relevant data when the LSR is completed (even if it was rescheduled at the CLEC's request), since it did not want to cause delay by requiring the CLEC to submit a supplement to its original order. In these cases, such LSRs would be excluded from OP-13A (and OP-13B), since the scheduled date would not be the same as the completion date, *i.e.*, it would be invalid. Qwest is currently working on a method to allow changes to these dates and times within the system directly, which should eliminate the problem.

Exception 1014 related to the overall quality of the data used to calculate OP-7, OP13-A and OP13-B. The resolution of issues in Exception 1014 is explained in more detail in Liberty's Performance Measure Release Report for OP-7. Liberty believes that the quality of data has improved significantly since our initial review. Starting with the January 2001 data, Liberty observed far less missing data (such as lift/lay times, start/stop times, and CLEC contact names/phone numbers) and fewer invalid entries. For the most part, mistakes of this type that occur now should have a negligible effect on reported results for OP-13A.

There were some lingering data entry errors with January data, however. Testers did not record delay start and stop times for a significant number of LSRs that had CLEC delays; in some cases, the times that were recorded seemed inconsistent with the LSR stop and start times. In particular, of roughly 5,800 LSRs in January, roughly 750, or 13 percent, had CLEC delays but no recorded delay start or stop times. These LSRs were excluded from the calculation of OP-13A, resulting in an underreporting of results. According to Regulatory Reporting, tester mistakenly believed that delay times only had to be recorded for existing lines, rather than both new and existing lines. Additional training for testers was completed during February to reinforce the need for accurate data recording.

Liberty's review of February 2001 data indicated that the problem was mitigated to some degree during that month; of roughly 6,000 LSRs, about 300 had missing delay times, or roughly 5 percent. Liberty has been assured that the quality of the data recording will improve considerably

due to the training given to the testers during February. Liberty believes that continued improvement in data quality should correct the underreporting problem over the longer term.

c. Observations

There were no observations related to this measure.

d. Conclusions

OP-13A provides an accurate measure of the percentage of LSRs for coordinated unbundled loop cuts completed on time.

After Liberty released OP-13, Qwest initiated a PID change that eliminated the exclusion for CLECs not being ready within 30 minutes and just dealing with such matters as delay time intervals. The ROC-TAG approved the PID change and asked Liberty to audit the change. Liberty reviewed the code change, as well as the change to Qwest's business requirements document. Liberty also audited results that reflected this change and concluded that it had been properly implemented by Qwest.

5. Recommendations

Qwest needs to continue its efforts to ensure that manually recorded data are captured accurately and completely. Any future review or monitoring of OP-13A should focus in part on the quality and completeness of the raw input data. In particular, Qwest should verify that delay start and stop times are being recorded for any LSR with a CLEC-caused delay. Also, Qwest should ensure that testers are routinely trained on how to properly record delay start and stop times, given the number of seemingly invalid times encountered in the January data.

In addition to the problems discussed above, Liberty found that OP-13 (A and B) has just recently reached a stage of maturity in which it can be relied on for accurate results. Qwest needs to ensure that it continues to improve its data recording, that it ensures process documentation is consistent with the programs that perform data manipulation, and that changes in procedures and programs are carefully documented and tested.

G. OP-13B – Coordinated Cuts Started Without CLEC Approval

1. Introduction and Background

Performance measure OP-13B is a diagnostic intended to measure the percentage of all LSRs for coordinated cuts of unbundled loops that are actually started without CLEC approval. The formula for this measure in the PID is:

> *(Count of LSRs for Coordinated Unbundled Loop cuts whose actual start time occurs without CLEC approval) / (Total Number of LSRs for Coordinated Unbundled Loop Cuts completed in the reporting period) x 100*

Where Qwest's records are missing evidence of CLEC approval of the cutover, the LRS will be counted as a "miss" under OP-13B. Thus, the total number of LSRs without evidence of CLEC approval, either because of omissions in data entry or because approval was actually not received, constitutes the numerator of OP-13B. The denominator is the total number of LSRs for unbundled loops completed during the reporting period.

The PID lists four specific types of exclusions for OP-13B also applicable to OP-13A. Two of these, records with invalid start/stop dates/times or scheduled dates/times, and records missing data essential to the calculation of the measure, are also applicable to OP-7. "Projects," or LSRs involving 25 or more lines, are also excluded under OP-13B. The last exclusion specifies that records with invalid completion dates be excluded. OP-13B is reported on a product basis, both for analog loops and for all other types of loops. It is disaggregated to the state level, as well as to the individual CLEC level.

2. Overall Summary

OP-13B can be released for OSS testing. There are no outstanding exceptions or observations related to these measures.

3. Analysis

During a visit to the Des Moines Center in September 2000, Liberty conducted several interviews and observed the data recording done during the cutover process. Liberty also reviewed the process used to create the unbundled loop database and reviewed the algorithms employed by Qwest's Regulatory Reporting to calculate the unbundled loop performance measures for July 2000 from this database. Liberty's analysis revealed several problems with OP-13B: the quality of the data used to calculate this measure, Qwest's definition and use of exclusions, and calculation errors. This analysis led to two exception reports related to OP-13B, wherein Liberty concluded that the reported results for July 2000 were inaccurate.

Qwest subsequently implemented improvements in the business processes used to collect data, and sought changes to the PID to clarify exclusions. Liberty has determined that Qwest has satisfactorily resolved the issues raised in the exception reports (see the discussion of exceptions below). Liberty re-examined the unbundled loop database and reported results for January 2001, and held discussions with Qwest's Regulatory Reporting personnel regarding open issues or questions. Liberty recalculated and duplicated Qwest's January 2001 regional results, as well as results for several states and individual CLECs.

4. Findings and Conclusions

a. Performance Measure Release Date

OP-13B was considered ready-for-release as of April 6, 2001.

b. Exceptions

There were two exceptions regarding this performance measure, E1014 and E1015.

In Exception 1015, Liberty originally noted that Qwest was using the existence of entries in the CLEC contact name and CLEC contact phone number fields as criteria for whether they had approval to start the cut. When Liberty reviewed July 2000 data, the sheer volume of missing data resulted in Qwest reporting more LSRs as having no approval than was actually the case. At that time, there was no exclusion in the PID for missing data, nor was there any specific clarification for missing data relating to CLEC approval. Qwest subsequently received approval to add new language in the PID. The PID states that records with missing data essential to the calculation of the measurement will be excluded, but clarifies that this does not apply to missing record evidence of CLEC approval. Indeed, the PID specifically states that, where Qwest's records are missing evidence of CLEC approval of the cutover, (*i.e.*, a CLEC contact name and phone number at a minimum) it will be treated as a "miss" under OP13-B (and OP13-A). Liberty believes this treatment is appropriate given the improvements in Qwest's data entry; it is more likely the reported results for OP-13B will reflect not securing CLEC approval rather than poor data capture processes.

Liberty also commented that the PID did not provide for exclusions under OP-13B, and that Qwest had been excluding projects and LSRs with illogical start and stop times. New exclusions were subsequently added to the PID, whereby any LSRs with more the 25 lines will be excluded, records with invalid completion dates will be excluded, and records with invalid start/stop dates/times or invalid schedule date/times will be excluded. Qwest's algorithm as described in its Business Requirements document does not reflect exclusion of projects with more than 25 lines, but Regulatory Reporting has assured Liberty that the algorithm does indeed screen out LSRs for projects. The algorithm checks for valid completion dates when it extracts only LSRs completed within the reporting month. The algorithm now also checks for and excludes LSRs with (1) missing scheduled times; (2) missing or invalid cutover start/stop times; (3) missing or invalid delay start/stop times for those LSRs with CLEC delays; and (4) invalid scheduled dates, *i.e.*, those not matching the completion date. Qwest's Regulatory Reporting personnel indicated to Liberty that these exclusions had been added to OP-13A at the same time. Although arguably some of the data is not necessary for the OP-13B calculation, Qwest concluded that it should treat the exclusions the same under OP-13A and OP-13B, so that OP-13B would more closely represent a diagnostic of OP-13A. Indeed, the number of LSRs included in OP-13A should be the same as OP-13B, except for the exclusion of LSRs with delayed starts of more than 30 minutes due because the CLEC was not ready.

Under Qwest's algorithm, if there is an LSR with an early cut, the "CLEC approval" field must reflect a "true" flag, except in cases where there was a true "VP expedite" flag, which indicates that CLEC management explicitly asked for an early cut. For LSRs with an early cut that have a true CLEC approval flag, the algorithm also checks to ensure there is a CLEC contact name and phone number recorded; if not, the item is treated as a "miss." If there is an LSR without an early cut, Qwest's algorithm does not check whether there was a true flag in the CLEC approval field, but only checks for the name and phone number for the CLEC contact. If the detailed contact information is missing, the item is a "miss." This is consistent with the new language in the PID, whereby the CLEC contact name and phone number are the required minimum evidence for CLEC approval, regardless of affirmative entries in other fields.

The algorithm currently does not explicitly treat an LSR without an early cut as a miss if the CLEC approval field is blank or false; it simply checks for a name and phone number in the CLEC contact fields to determine whether approval was received. Regulatory Reporting has stated that the business centers were not aware that they had to make an entry in the CLEC

approval field unless there was an early cut. Reportedly, testers have been given added guidance on this issue during February, and have begun using the field to note approval for all LSRs. Regulatory Reporting was undecided about whether it will modify the algorithm to include a positive check on the CLEC approval field for LSRs without an early cut. Liberty recommends that this modification be added to the algorithm to derive OP-13B results.

Finally, Liberty originally noted in its exception report that Qwest was recording whether it had approval to start the cutover process in general, rather than specific approval to lift the first loop. The definition of "actual start time" defined as the time Qwest lifts the loop was subsequently eliminated from the PID. Qwest's results still measure whether it had approval to start the cutover process, which now is consistent with the language in the PID.

Exception 1014 related to the overall quality of the data used to calculate OP-7, OP13-A, and OP13-B. The resolution of issues in Exception 1014 is explained in more detail in Liberty's Performance Measure Release Report for OP-7. Liberty believes that the quality of data has improved significantly since its initial review. Starting with the January 2001 data, Liberty observed far less missing data (such as lift/lay times, start/stop times, and CLEC contact names/phone numbers, etc.) and fewer invalid entries. For the most part, mistakes of this type that occur now should have a negligible effect on reported results for OP-13B. Whereas missing CLEC contact name and phone number previously had been attributed to data errors, Liberty believes that data entry errors have diminished to the extent that Qwest can be held to the standard added to the PID, where such LSRs are treated as a miss.

c. Observations

There were no Observations related to this measure.

d. Conclusions

OP-13B provides an accurate measure of the percentage of LSRs for coordinated unbundled loop cuts started without CLEC approval.

5. Recommendations

Qwest should make a modification to the algorithm used to calculate OP-13B to make a true flag in the CLEC approval field a mandatory condition for all LSRs. Given Qwest's assertion that its data entry process has been improved, it would be appropriate to verify this field in cases of LSRs that did not have an early cut as well as those that did.

Qwest needs to continue its efforts to ensure that manually recorded data are captured accurately and completely. Any future review or monitoring of OP-13B should focus in part on the quality and completeness of the raw input data.

In addition to the problems discussed above, Liberty found that OP-13 (A and B) has just recently reached a stage of maturity in which it can be relied on for accurate results. Qwest needs to ensure that it continues to improve its data recording, that it ensures process documentation is consistent with the programs that perform data manipulation, and that changes in procedures and programs are carefully documented and tested.

H. OP-15 – Interval for Pending Orders Delayed Past Due Date

1. Introduction and Background

OP-15 is intended to help evaluate the extent to which pending orders are delayed past the due date as of the end of the reporting period. OP-15A measures the average number of business-days that late, pending orders have been delayed beyond the original due date for reasons attributed to Qwest. OP-15B reports the number of wholesale pending orders measured in OP-15A that were delayed for Qwest facility reasons.

OP-15 is reported on a CLEC-aggregate and individual CLEC basis. Performance results are also reported for the entire Qwest region and at the state level for the various types of products common to other performance measures. The PID indicates that OP-15A is a diagnostic measure with an expectation for parity with retail service for those products with a retail comparative. OP-15B is strictly a diagnostic measure.

Qwest had difficulty developing reasonably accurate reporting for OP-15, primarily because it has a significant difference from other of the ordering-provisioning measures. The other service order performance measures, OP-3, OP-4, OP-5, and OP-6, all use completed service orders as the basis for data collection and results reporting. However, OP-15 by its basic nature involves service orders that are not completed. The result of this characteristic was that not all service order entries have been made and checked for the data set used by OP-15, and therefore some of the programming techniques used in other measures to capture the various product-level dis-aggregations did not work for OP-15. Changes to the PID, accompanied with changes to the data capture and processing programs have now permitted Qwest to report consistent and useful results for pending service orders.

2. Overall Summary

There were three observations and no exceptions that applied to OP-15. Qwest has satisfactorily resolved the issues raised in the observation reports. The performance measure is ready for release.

3. Analysis

Liberty's audit of OP-15 involved interviews with Qwest personnel, data and information requests, tracking of data through the process, review of program code, and recalculation of some results.

Liberty found that the definition for several performance measures did not include a sufficient listing of the records that Qwest excluded from the calculation results. This matter was documented in Observation 1005. The PID for OP-15 now lists six types of orders that do not count for OP-15. The most significant of these is that orders that are pending for customer-caused reasons are excluded. The other exclusions simply are not applicable orders, or orders that do not have the codes and data necessary to calculate the measure. Exclusions are identified through Qwest's "pend.sas" program. There are actually 25 specific types of exclusions that all relate to the six types listed in the PID. Liberty analyzed the exclusions that Qwest applied to the

April, 2001, data for OP-15. Of the more than 40,000 records pulled, nearly 59 percent were excluded for customer-caused reasons. However, for the wholesale orders, this exclusion accounted for only 28 percent of the total records. On the retail side, the other exclusions with a significant number of records were those with old (prior to 4/1/99) service order entry dates, and those designated as no inward activity (*i.e.*, not orders for new or additional lines). For wholesale, pending orders, there were only two exclusions (other than the those for customer-caused miss) that made up more than 1 percent of the total. Test CLEC records accounted for 2.7 percent of the records, and records with an invalid class of service designation accounted for 3.6 percent of the total whole records. Liberty concluded that the PID definition of exclusions and the relative number of excluded records resolved the issues raised in Observation 1005 as it related to OP-15.

Liberty also analyzed the excluded records for the month of May 2001, and obtained similar results. For all records, 37 percent had been excluded for customer-caused reasons; on the wholesale side this was 29 percent. Overall, Qwest used 50 percent on the records pulled, and used 63 percent of the wholesale records. The only exclusion of significance aside from those flagged for customer-caused reasons was an invalid product code, which accounted for 6 percent of the total records and the same percentage for wholesale only.

Observation 1008 reported that certain service orders were not included in the results for several OP measures because some products had orders that were classified as both designed and non-designed, and this classification was used to segregate and report measure results. Qwest's resolution of this observation resolved the issue for OP-3, -4, -5, and –6. This issue was dealt with more directly for OP-15 as a results of Observation 1019, which noted several reporting difficulties. The end result of this observation was to change the way OP-15 was reported from geographic (MSA/non-MSA and High/Low Density) levels to reporting only on a statewide basis. Qwest's reporting of OP-15 for April and May, 2001, is now consistent with the revised and approved PID. Therefore, Liberty considers the issues raised in Observations 1008 and 1019 to be resolved.

During its audit, Liberty noted that there was a lack of retail comparable reporting for March, 2001, for products that are completely designed services, while product groups that have both designed and non-designed products included the retail comparable. Qwest reported that it corrected the comparable for designed products and would begin reporting those results starting with the April, 2001, results. Liberty confirmed this to be the case. Qwest also reported that the retail comparable for LIS trunks (Feature Group D) would not be provided until the June, 2001, results were reported.

Liberty reviewed Qwest's technical documentation and business requirements documents related to OP-15. These documents are useful to Qwest personnel in the identification of the fields, methods, and exclusions used in the performance measure. Liberty recommends that Qwest improve the business requirements documents to better describe the process used in calculating OP-15 and ensuring that they are consistent with the PID in matters such as identification of the retail comparables.

Liberty recalculated the wholesale results for the state of Washington for March and April, 2001, Colorado for April, 2001, and Idaho and Colorado for the month of May, 2001. These calculations matched those reported by Qwest. Liberty's review of the program code verified that the reporting for the retail comparables used the identical designation and calculation routines.

Using Qwest's "ad hoc" file for the month of May 2001, Liberty checked the calculations for the region and several states. This helped to verify correct programming and translation from the individual records to reported results.

Liberty made an assessment of the programming logic and field instructions for assigning missed codes. The pend.sas program identifies missed codes that specifically relate to customer-caused reasons and Qwest-caused facility reasons. The default for any other codes is Qwest-caused for non-facility reasons. Liberty confirmed that Qwest mapping of missed codes to customer/company/facility designation was logical. For May 2001 and wholesale records, 1096 were excluded from the calculations because of customer-caused reasons. Over half of these records had a missed code that indicated the customer was not ready. The only other significant categories included codes for a customer-requested later appointment date and for a change in requirements by the customer. There were less than 20 records that had any type of questionable codes such as "customer disaster/work stoppage."

4. Findings and Conclusions

a. Performance Measure Release Date

Liberty considered measure OP-15 to meet audit release requirements as of June 29, 2001. Qwest's reporting of OP-15 is accurate. Reporting is complete with the exception of the retail comparable for LIS trunks, which will begin with the June 2001 results.

b. Exceptions

There were no exceptions related to OP-15.

c. Observations

Three observations, 1005, 1008, and 1019, dealt with OP-15. As discussed in the analysis section above, the issues raised in these observations have been resolved.

d. Conclusions

OP-15 accurately reports on (1) the extent to which pending, late orders have been delayed due to Qwest, and (2) the number of late and pending orders that were delayed due to Qwest facility reasons.

5. Recommendations

Qwest should review and improve the business requirements documents related to OP-15.

Qwest should report the retail comparable for LIS trunks.

Qwest should regularly monitor the percentage of exclusions identified in the data set to help identify data problems that may arise in the future.